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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/627,355	07/28/2000	Bob L. Mackey	CDST-F102	3572
7590 02/09/2005 LAW OFFICES OF LADAS & PARRY LLP 5670 Wilshire Boulevard, Suite 2100 Los Angeles, CA 90036-5679			EXAMINER SANTIAGO, MARICELI	
			ART UNIT 2879	PAPER NUMBER

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/627,355

Applicant(s)

MACKEY ET AL.

Examiner

Mariceli Santiago

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 36,37,39-44 and 52-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 36,37,39-44 and 52-58 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 15, 2004 has been entered.

### ***Response to Amendment***

The Amendment, filed on April 30, 2005, has been entered and acknowledged by the Examiner.

Cancellation of claims 1-35, 38 and 45-51 has been entered.

Claims 36, 37, 39-44 and 52-58 are pending in the instant application.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 36, 37, 39, 40, 42, 43, 44, 53 and 55-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor et al. (US 5,536,993).

Regarding claim 36, Taylor discloses a method for preventing contamination of a field emission display device (61), the method comprising the step of providing a cathode structure (66) of a FED device, the cathode structure (66) comprising an electron emitting structure (70)

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above one side thereof, and disposing a substantially continuous barrier layer (64) of substantially uniform thickness over the one side of the cathode structure (66). In regards to the limitation "the barrier layer is configured to prevent substantial penetration of electrons through said barrier", the Examiner notes that it has been held that a recitation of an element being "configured to" perform a function is not a positive limitation but only requires the ability to so perform. Furthermore, language that suggest or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation (See MPEP 2106, II, C). Specifically, Applicant discloses a barrier layer made of silicon oxide having a thickness ranging between 50-500 nm (Page 6, lines 10-22), Taylor discloses a barrier layer made of silicon dioxide having a thickness of 50 nm (Column 7, lines 23-25), accordingly, as long as the claimed element is disclosed by the prior art, it is the Examiner's position that the element performs the claimed function.

Regarding claim 37, Taylor discloses a method wherein the cathode structure comprises a cathode substrate (66) of the FED device.

Regarding claim 39, Taylor discloses a method comprising disposing the barrier layer over the cathode structure. In regards of the limitation wherein the barrier layer has a thickness sufficient to prevent substantial penetration of electrons therethrough, Taylor discloses a silicon dioxide barrier layer having a thickness of 50 nm (Column 7, lines 23-25), it is the Examiner's position that the barrier layer material and thickness disclosed by Taylor inherently prevents penetration of electrons as evidenced by Taylor's disclosure of all the claimed structural limitations.

Regarding claim 40, Taylor discloses a method wherein the barrier layer selected from the group consisting of silicon dioxide and SiO<sub>2</sub> (Column 7, lines 23-25).

Regarding claim 42, Taylor discloses a method comprising disposing the barrier layer over the cathode structure, wherein the barrier layer prevents the migration of contaminants from the cathode structure into the field emission display device (Column 6, lines 48-56), and the barrier layer made of silicon dioxide having a thickness of 50 nm (Column 7, lines 23-25). It is the Examiner's position that Taylor's disclosure of all the claimed structural limitations inherently prevents substantial migration of any contaminants regardless of its origin from the substrate towards the active region, inclusive those contaminants originated by electron bombardment of the cathode structure.

Regarding claim 43, Taylor discloses a method comprising disposing the barrier layer over the cathode structure. In regards of the limitation wherein the barrier layer prevents the migration of sodium from the cathode structure into the field emission display device, Taylor discloses a silicon dioxide barrier layer having a thickness of 50 nm (Column 7, lines 23-25), it is the Examiner's position that the barrier layer material and thickness disclosed by Taylor inherently prevents migration of sodium as evidenced by Taylor's disclosure of all the claimed structural limitations.

Regarding claim 44, Taylor discloses a method comprising disposing an electrically conductive barrier layer (79) over the cathode structure (66).

Regarding claim 53, Taylor discloses a FED device comprising means for preventing migration of contaminants from a cathode structure (66) into an active region of the FED device (Column 6, lines 48-56), for such purposes Taylor discloses a barrier layer made of silicon dioxide having a thickness of 50 nm (Column 7, lines 23-25). It has been held that means plus function limitations are met by structures which are equivalent to the corresponding structures recited in the specification. In re Ruskin, 347 F.2d 843, 146 USPQ 211 (CCPA 1965) as implicitly modified by In re Donaldson, 16 F.3d 1189, 29 USPQ2d 1845 (Fed. Cir. 1994). See

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also In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1951 (Fed. Cir. 1999). Accordingly, Taylor's disclosure of the same means as disclosed in applicant's specification, would prevent substantial migration of any contaminants regardless of its origin from the substrate towards the active region, inclusive those contaminants originated by electron bombardment of the cathode structure.

Regarding claim 55, Taylor discloses a FED device wherein the preventing means comprises a substantially continuous barrier layer (64) of substantially uniform thickness between the cathode structure and plurality of cathode emitters (70).

Regarding claim 56, Taylor discloses a method comprising disposing the barrier layer over the cathode structure. In regards of the limitation wherein the barrier layer is configured to prevent substantial penetration of electrons from the cathode emitters into the cathode substrate, Taylor discloses a silicon dioxide barrier layer having a thickness of 50 nm (Column 7, lines 23-25), it is the Examiner's position that the barrier layer material and thickness disclosed by Taylor inherently prevents penetration of electrons as evidenced by Taylor's disclosure of all the claimed structural limitations.

Regarding claim 57, Taylor discloses a method wherein the barrier layer is made of silicon dioxide and has a thickness of 50nm (Column 7, lines 23-25), it is the Examiner's position that the barrier layer material and thickness disclosed by Taylor inherently prevents substantial penetration of electrons from the cathode emitters into the cathode structure.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 52 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (US 5,536,993) in view of Kawate et al. (US 5,770,918).

Regarding claims 52 and 54, Taylor is silent in respect to the type of glass used for the cathode substrate, specifically high-sodium glass. However, in the same field of endeavor, Kawate discloses the general suitability of several types of glass for the use as cathode substrates in display devices, inclusive soda-lime glass (Column 7, lines 27-29), which is well known for its high-sodium contents. Accordingly, one of ordinary skills in the art would consider the use of soda-lime glass for the material of the cathode substrate as an obvious matter of design choice, since the selection of a known material on the basis of its suitability for the intended use would be considered within the level of skills in the art as evidenced by Kawate.

Claims 41 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (US 5,536,993) in view of Borel et al. (US 4,857,161).

Regarding claims 41 and 58, Taylor discloses the method as claimed and further comprising the barrier layer made of silicon dioxide and having a thickness of 50nm, Taylor acknowledges the use of the barrier layer for enhancing the adhesion of a subsequent layer to the substrate and to limit the diffusion of impurities from the substrate to the subsequent layer (Column 6, lines 45-49). Taylor fails to disclose the limitation of the barrier layer having a thickness of approximately 100 nm. However, in the same field of endeavor, Borel discloses a method of manufacturing an FED device further comprising the step of disposing a substantially continuous barrier layer (7) of substantially uniform thickness disposed over the one side of the cathode substrate, the barrier layer having a thickness substantially of 100 nm and comprising silicon dioxide (Column 4, lines 1-8) in order to improve the adhesion of the cathode conductors

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to the substrate (Column 2, lines 49-53). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the barrier layer having a thickness of approximately 100 nm as disclosed by Borel in the method of Taylor in order to improve the adhesion of the cathode conductors to the substrate, since both references acknowledge the use of an intermediate barrier layer and its advantages in the manufacturing of FED devices.

### ***Response to Arguments***

Applicant's arguments filed April 30, 2004 have been fully considered but they are not persuasive.

In response to applicant's arguments that the prior art of record fails to teach or suggest the claimed invention particularly in reference to the limitations of a "barrier layer is configured to prevent substantial penetration of electrons through said barrier" and to preventing "contaminants due to electron bombardment" from migrating from a "cathode structure into an active region of said field emission display device", the Examiner respectfully disagree. Taylor discloses a cathode structure comprising a cathode substrate provided with a barrier layer and an electron emitting structure on a same side thereof, the barrier layer being made of silicon oxide and having a thickness of 50 nm. Applicant's disclosure exemplifies a barrier layer made of silicon oxide and having a thickness ranging from 50-500 nm. Mere silence of the claimed functional limitations in the prior art reference does not patentably distinguish the claimed invention over the prior art, provided that the prior art reference teaches a same or equivalent structural configuration corresponding to the structure recited in applicant's specification for performing the claimed function. The material composition and thickness of the barrier layer, i.e., of silicon oxide and 50 nm in thickness, disclosed by Taylor corresponds to applicant's



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barrier layer also of silicon oxide and 50-500 nm of thickness, thus, Taylor's equivalent structural configuration meets the requirement for performing the claimed functional limitations.

In response to applicant's arguments in regards to claims 52 and 54, that the applied prior art references teach away from using a high-sodium content glass, the Examiner respectfully disagree. While a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention, (see *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)), it is submitted that applicant has not provided evidence of the portions of the applied references which teach away from the claimed invention, the outstanding arguments are based on applicant's own disclosure of prior art embodiments. Taylor ('993) and Kawate ('918) both teach the use of a glass substrate for field emission devices, with Kawate particularly teaching the conventional use of soda-lime glass for FED's substrates. Accordingly, there is a reasonable expectation for the high-sodium glass composition disclosed by Kawate to successfully perform when used as a glass substrate in the invention disclosed by Taylor, since the use of high-sodium content glass substrates are conventionally used in the art. Moreover, in the case that migration of impurities present in the substrate takes place, due in part to the use of the high-sodium content glass, Taylor substantially prevents such adversity by use of the silicon oxide based barrier layer.

For the reasons stated above, the rejection of claims 36, 37, 39-44 and 52-58 are deemed proper.

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**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mariceli Santiago whose telephone number is (571) 272-2464. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*MSg 2/5/05*  
Mariceli Santiago  
Patent Examiner  
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